Robotic Mining Competition Questions & Answers
(new Q&As in red)

Technical Questions

Q. Can we use lithium ion batteries?
A. Lithium ion batteries are acceptable, but there are vendor shipping restrictions which may be prohibitive. All safety precautions regarding use and charging must be followed.

Q. If a design is partially reliant upon a difference in air pressure (but not completely reliant upon it), then would that design still be allowed. As per Rule #25, no physical process that would not work on Mars is not allowed. Since NASA is developing helicopters that can operate on Mars, any design that is only partially reliant upon pressure differences should be fine (especially considering the lower gravity on Mars). Is this the case?
A. The atmospheric pressure on Mars is extremely low - it is a soft vacuum. Therefore it is not advisable to use air pressure. For the purposes of this competition air pressure sensors shall not be used.

Q. For the big red stop button, can the electronics be left on as long as all motors and actuators are removed from power? For example, if you have two separate power systems, the big red button would only turn off the motor power system.
A. The E-stop button must disable all power to the robot, except for a laptop computer. This includes the electronics, motors and actuators. Refer to rule 22 for all emergency stop requirements.

Q. The official rules state that the robot must not exceed a 1.5m height during a competition run; reference rule 24. Does this criteria still apply if the robot is docked to the collection bin and attempting to deliver the regolith? For example, if a design lifts the onboard regolith upward in order to dump it into the collection the robot may extend slightly past the 1.5m limit in order to reach an angle at which the regolith can slide out into the bin.
A. During regolith simulant dumping operations only, the mining robot may deploy itself and exceed 1.5 m in height, but must be lower than the height of the ceiling of the tent which is no more than 2.5 m above the surface of the regolith.

Communications Questions

Q. Can a team mount a camera on the beacon (mounted to the bin) which would communicate only with the robot?
A. Yes, as long as the camera is mounted on the collector bin only and self-powered. Refer to rule 15 for all restrictions.

Q. "The teams must use the USA IEEE 802.11 b/g standard for their wireless connection (WAP and rover client). Teams cannot use multiple channels for data transmission." Does that mean we can't use two channels for our router? Or that we can't use two Ethernet connections from our router to the NASA "Ethernet connector" or "G network switch"?
A. Teams are assigned a wireless channel to use between their access point and the rover, either channel 1 or 11 on the 802.11b/g standard. During competition, teams cannot use any more than this one WiFi channel, because the other rover team will be using the opposite channel (11 or 1). No other spectrum is available. We highly recommend students watch this video for a broader view of the communications issues and guidance: http://www.youtube.com/watch?v=DHip9qdxqDE